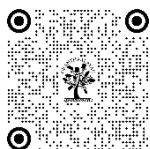


AN ANALYSIS OF TECHNIQUES, MATERIALS, AND STYLES OF TEMPLE CONSTRUCTION IN THE POST-GUPTA PERIOD: AN ARCHAEOLOGICAL STUDY

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ABSTRACT

The post-Gupta period (circa 600 CE to 900 CE) marks a significant transitional phase in Indian temple architecture, characterized by regional diversification, technical refinement, and stylistic innovations. This study seeks to analyze the key architectural techniques, construction materials, and stylistic elements employed in temple construction during this era, drawing primarily on archaeological evidence from various parts of the Indian subcontinent. The research examines the shift from early Gupta prototypes to more elaborate and regionally distinct styles, including the Nagara (North Indian), Dravida (South Indian), and Vesara (Deccan) temple forms. It explores the development of architectural components such as the garbhagriha (sanctum), mandapa (pillared hall), shikhara (superstructure), and decorative motifs. Particular attention is given to construction technologies—such as stone cutting, interlocking systems, and masonry techniques—that enabled the durability and complexity of temple structures. The study also investigates the use of different materials, including sandstone, granite, and brick, analyzing how regional availability and cultural preferences influenced material selection. Through detailed case studies of notable temple sites like Deogarh, Bhitargaon, Pattadakal, and Aihole, the paper uncovers the interaction between local artistic traditions and pan-Indian religious and cultural movements. This archaeological inquiry contributes to a deeper understanding of how temple architecture in the post-Gupta period not only served religious purposes but also functioned as a medium of political assertion, cultural identity, and artistic excellence. The findings underscore the period's significance as a formative stage in the history of Indian temple architecture, laying the groundwork for the grand edifices of the medieval era.

Keywords: Post-Gupta Architecture, Temple Construction Techniques, Building Materials

1. INTRODUCTION

The post-Gupta period, roughly spanning from the 6th to the 9th century CE, stands out as a defining epoch in the development of Indian temple architecture. This period, following the decline of the classical Gupta empire, witnessed not a cultural stagnation but rather a surge of artistic and architectural innovation under emerging regional powers such as the Maitrakas of Vallabhi, the Vardhanas of Thanesar, the Chalukyas of Badami, the Pallavas of Kanchipuram, and the Rashtrakutas of the Deccan. These dynasties not only carried forward the architectural legacy of the Guptas but also transformed it, contributing significantly to the emergence of distinct regional temple styles. This paper explores the critical aspects of temple construction in the post-Gupta period through an archaeological lens—focusing on techniques, materials, and stylistic developments that defined temple architecture during this transformative era.¹

During this period, temple construction began to transition from modest, flat-roofed sanctuaries to grand, towering structures that symbolized not only religious devotion but also political power and cultural identity. The evolution of

architectural techniques was crucial to this transformation. Builders began to refine the use of interlocking stone masonry, employing methods such as mortise-and-tenon joints that allowed stone blocks to be placed securely without the need for mortar. This dry masonry technique is prominently observed in temples like the Dashavatara Temple at Deogarh. In regions lacking in stone resources, brick was used innovatively, as seen in the Bhitargaon temple in Uttar Pradesh, where large-sized burnt bricks were combined with terracotta decorations and lime plaster to create durable and aesthetically rich structures.² Rock-cut techniques, although rooted in earlier Buddhist and Jain traditions, continued to thrive under the Pallavas and Chalukyas, who transformed monolithic caves into elaborate shrines, later transitioning to fully structural stone temples.

The selection and utilization of materials in temple construction were closely tied to regional geography, local availability of resources, and technological expertise of artisans during the Post-Gupta period.³ In northern India, particularly in the regions of Madhya Pradesh and Uttar Pradesh, red sandstone and other sedimentary rocks such as quartzite and slate were commonly employed. These stones were relatively easier to quarry and carve, allowing artisans to develop elaborate decorative schemes on temple facades, door jambs, and pillar capitals. The Dashavatara Temple at Deogarh, dating to the early 6th century CE, exemplifies the effective use of red sandstone in constructing a Nagara-style temple with richly sculpted panels depicting Vaishnavite mythology. Similarly, the Kankali Devi temple at Tigawa and the Lakshman Temple at Sirpur demonstrate the continued use of sandstone in temple architecture during this period.⁴

In southern India, especially in the regions of Tamil Nadu and Karnataka, granite emerged as the primary material of temple construction. Granite, though extremely durable, posed significant challenges due to its hardness, which required the development of advanced chiseling and polishing techniques. Despite these challenges, South Indian artisans mastered the use of granite over time, as evidenced by the architectural advancements under the Pallava dynasty. Early Pallava rock-cut cave temples at Mahabalipuram—such as the Mandapams and the Pancha Rathas—were carved out of softer stone, but soon, the artisans transitioned to full-fledged granite structural temples like the Shore Temple, built around the early 8th century CE. The Shore Temple, facing the Bay of Bengal, stands as one of the earliest examples of structural granite temples in South India, showcasing the architectural maturity achieved by the Pallavas.⁵

In the Deccan plateau and central India, where stone resources were unevenly distributed, bricks were widely used as an alternative building material. These bricks were often baked and combined with lime mortar or mud plaster to enhance their durability. The use of terracotta plaques and decorative panels in such structures added an artistic dimension to otherwise simple exteriors. The Bhitargaon temple in Kanpur district, built in the 5th century CE, stands as a remarkable example of a brick temple, featuring large kiln-burnt bricks and intricate terracotta ornamentation depicting celestial beings, geometric motifs, and scenes from Hindu mythology. This temple also represents a critical architectural innovation with its early experimentation with curvilinear *shikhara* design.⁶

In Bengal and parts of Odisha, where laterite and clay soils were abundant, temple builders continued to rely on brick and terracotta, laying the foundation for the unique Bengal temple architecture that flourished in the medieval period. The use of bricks allowed for intricate surface detailing and facilitated rapid construction, though these structures were generally less durable than their stone counterparts. Over time, regional artisans in these areas developed localized styles marked by curved roofs and terracotta panels that fused religious symbolism with folk artistic expressions.

The choice of materials also influenced the longevity and preservation of these monuments. While granite structures of the south have withstood centuries of weathering and invasions, many brick and sandstone temples in the north and central India have suffered considerable damage or decay. However, through archaeological conservation and restoration efforts, some of these temples have been studied in-depth, revealing not only architectural practices but also socio-religious contexts, construction technologies, and material economies of the time.⁷

Thus, the regional adaptation in material selection was not only a matter of geological compulsion but also a reflection of evolving architectural knowledge, aesthetic priorities, and socio-cultural dynamics. These diverse material practices laid the groundwork for the rich plurality of Indian temple architecture and demonstrated the ingenuity of ancient Indian craftsmen in harmonizing natural resources with sacred design.

Stylistically, the post-Gupta period witnessed the crystallization of three major temple styles that would dominate Indian temple architecture for centuries: the Nagara, Dravida, and Vesara styles. The Nagara style, prevalent in northern India, is characterized by a square sanctum (*garbhagriha*), a curvilinear superstructure (*shikhara*), and often a flat-roofed pillared hall (*mandapa*).⁸ The Deogarh temple, constructed in the early 6th century, is one of the finest examples of Nagara architecture. It features a prominent, rising *shikhara* with intricate sculpted doorframes and narrative panels that vividly depict Vishnu's ten avatars (*Dashavatara*), reflecting the religious symbolism and aesthetic grandeur

associated with the style. In the Nagara style, the sanctum is usually positioned at the center of the temple, symbolizing the cosmic axis, while the elevation of the shikhara often corresponds to the vertical axis leading to the divine. This style was predominantly used in the northern regions, including Madhya Pradesh, Uttar Pradesh, Rajasthan, and parts of Odisha, where local materials like sandstone were employed, further contributing to the distinctive appearance of the temples.⁹

In contrast, the Dravida style, which flourished in the southern regions under the Pallavas, was marked by its pyramidal vimanas (towered superstructure), pillared halls, and decorative niches that housed numerous deities. The temples built during the Pallava dynasty, especially those at Mahabalipuram, such as the Five Rathas, reflect the early phase of Dravidian temple architecture. These monolithic rock-cut temples gradually evolved into larger, fully constructed stone structures, culminating in the Kailasanatha temple at Kanchipuram. The Kailasanatha temple is renowned for its intricate carvings, towering vimana, and expansive courtyard, which are characteristic of the mature Dravida style. The Dravida style is also known for its emphasis on horizontal expanses, with the temple complex often spreading out to accommodate large halls, courtyards, and colonnaded corridors.¹⁰ The use of granite, a durable material, became a hallmark of southern temple construction, ensuring the temples' survival for centuries.

The Vesara style, which developed in the Deccan under the Chalukyas and later in the Vijayanagara Empire, represents a syncretic fusion of the Nagara and Dravida elements. This hybrid architectural style was designed to incorporate the best features of both the northern and southern traditions, creating a unique architectural identity. The temples at Pattadakal and Aihole serve as prime examples of the Vesara style, showcasing an amalgamation of curvilinear towers (similar to the Nagara style) and pyramidal vimanas (akin to the Dravida style).¹¹ In these temples, the sanctum remains square, and the roof structure is often tiered, creating a synthesis of the curvilinear and pyramidal forms. The temples at Pattadakal, particularly the Virupaksha and Mallikarjuna temples, are significant in illustrating the development of Vesara architecture, with intricately designed pillared halls, numerous decorative sculptures, and a more fluid adaptation of the regional styles. The Vesara style can be considered a flexible and adaptive architectural approach that blends local traditions with broader cultural and religious influences from both north and south.¹²

Over time, the interaction of these three styles—Nagara, Dravida, and Vesara—would lead to the formation of a rich, diverse architectural landscape in India. While the Nagara style remained dominant in the north, the Dravida style was firmly entrenched in the south, and the Vesara style continued to evolve in the central and Deccan regions, reflecting the dynamic interplay of religious, cultural, and regional influences. The temples constructed during this period were not only religious centers but also hubs of artistic expression, where architectural design, sculpture, and iconography came together to create spaces that were meant to foster spiritual engagement and convey divine presence. These architectural forms, with their varying regional interpretations, contributed to the flourishing of a distinctive temple tradition that would continue to evolve through the medieval and early modern periods.¹³

Another noteworthy aspect of this period is the rich decorative programs that adorned temple exteriors and interiors. Sculptural art reached new heights, with intricate carvings of deities, mythological scenes, floral patterns, and celestial beings embellishing temple walls, pillars, and doorframes. Iconography played a central role in temple design, with thematic representations aligning with the sectarian orientation of the temple—Vaishnavite, Shaivite, or Shakta. These carvings were not merely ornamental but also functioned as visual texts for devotees, communicating religious stories and moral lessons.¹⁴ The Bhitargaon temple's terracotta panels and the narrative reliefs at Deogarh are prime examples of how iconography enhanced the architectural form and religious function.

Several key archaeological sites provide invaluable evidence for understanding temple architecture in this period. The Dashavatara Temple at Deogarh, dated to the early 6th century CE, marks one of the earliest surviving examples of a complete Nagara-style temple with a sanctum, vestibule, and sculpted doorway.¹⁵ This temple is a quintessential example of early Nagara architecture, featuring a prominently rising shikhara (curvilinear tower) and intricate narrative reliefs that depict Vishnu's avatars, offering a glimpse into the religious symbolism of the time. The temple's layout, including its square sanctum and the decorative doorframes, highlights the evolving temple design that would influence the region for centuries. The Deogarh temple, in particular, illustrates the combination of functional and symbolic elements, with its detailed carvings representing divine mythology.¹⁶

The Bhitargaon temple, located in Uttar Pradesh, is one of the few surviving brick temples of the Gupta and Post-Gupta era, and it stands out for its experimentation with terracotta art and early shikhara design. The temple's construction in brick rather than stone is a notable deviation from the more common practices in the region, showing how material availability influenced architectural choices. Its compact size and distinctive architectural features, such as

the sloping roof and the decorative terracotta panels, make it a critical site for studying the transitional phase of temple architecture, bridging the gap between earlier Buddhist rock-cut shrines and later stone temples. The Bhitargaon temple's use of brick and terracotta art also reflects the local adaptation of materials and techniques.¹⁷

In the Deccan, the rock-cut temples at Badami and Aihole offer insights into the transition from cave shrines to structural temples, showing the early stages of Vesara architecture. The temples at Badami, particularly the cave temples carved into the cliffside, illustrate the continuity of the rock-cut tradition from earlier Buddhist and Jain shrines.¹⁸ Over time, however, these rock-cut temples evolved into more complex structures, as evidenced by the later temples at Aihole. Aihole, often regarded as the cradle of early Indian temple architecture, is home to a diverse array of temples that showcase the gradual shift toward structural stone temples, with the merging of elements from both the Nagara and Dravida styles.¹⁹ The temples at these sites reveal the transition from simple cave sanctuaries to more elaborate, free-standing stone temples, highlighting the gradual development of the Vesara style that would dominate the Deccan in the subsequent centuries.²⁰

In the south, Mahabalipuram serves as a laboratory of architectural experimentation by the Pallavas, whose rock-cut and structural temples reveal the formative stages of the Dravida style. The early Pallava rock-cut temples, such as the Shore Temple, showcase the initial experiments with granite, a material that would come to define southern temple architecture. The Shore Temple, with its striking pyramidal vimana (tower) and intricately sculpted panels, marks the beginning of the Pallava dynasty's monumental architectural efforts.²¹ The Five Rathas, another Pallava creation, further illustrate the transition from monolithic rock-cut shrines to more elaborate and complex structural temples. These structures not only represent early Dravida architecture but also provide insights into the evolving techniques of carving and sculpting in the southern region. As the Pallavas refined their architectural expertise, they would go on to build some of the most iconic temples in South India, laying the groundwork for the Dravida style that would be further developed under the Cholas.²²

These sites—Deogarh, Bhitargaon, Badami, Aihole, and Mahabalipuram—serve as critical markers in the evolution of Indian temple architecture during the post-Gupta period. They provide key insights into the material innovations, stylistic transitions, and regional adaptations that characterized this transformative phase in temple construction.²³ By examining these temples, scholars can trace the development of major architectural styles such as Nagara, Dravida, and Vesara, and understand the broader cultural and religious contexts in which these temples were created.²⁴ The interplay between regional materials, local craftsmanship, and broader architectural trends is evident in these monuments, reflecting the dynamic and evolving nature of Indian temple architecture.²⁵

In conclusion, the Post-Gupta period was not only a phase of artistic and architectural continuity but also one of innovation and diversification. Through the use of advanced construction techniques, adaptation to local materials, and the development of distinct regional styles, this period laid the groundwork for the grand architectural achievements of later medieval India. The temples of the Post-Gupta period were more than religious monuments—they were expressions of a society in transition, reflecting evolving ideas about divinity, kingship, space, and artistic expression. This study reaffirms the Post-Gupta era as a cornerstone in the historical and cultural development of Indian temple architecture, as documented through its enduring archaeological legacy.

CONFLICT OF INTERESTS

None.

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None.

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